

363111679A) under 35USC §102(b) or as being obvious over Matsui (JP Patent 363111679A), Aoki et al (US Patent 5,737,474), Chandrasekhar (US Patent 5,689,122), Nitta et al (US Patent 6,252,895), Rushing (US Patent 6,331,832) and/or their combinations under 35USC §103(a). The applicants have amended independent claims 1 and 5 and added claims 30-33 which are dependent to the amended claims 1 and 5. The applicants respectively traverse the rejections of the Examiner based on the above amendment and the explanations as below.

Applicants have further limited the independent claims 1 and 5 by the feature of “a tuning section for changing an effective index of said grating”, which is believed patentably distinguishable from the cited patents. As described throughout the specification, the present invention discloses a novel semiconductor device which comprises a tuning region for changing the effective index of the grating, thus selecting a particular wavelength of the optical signal passing through the waveguide of the device for measurement and monitoring. The applicants believe that this added feature is not anticipated in Matsui.

In particular, Matsui discloses a semiconductor device in which a part of the light is reflected by the grating and absorbed in an optical absorption layer for detection. However, Matsui never teaches or implies a tuning region for changing the effective index of the grating so that the device can be tuned to select a particular wavelength of the optical signal. Thus, with the above distinguishing feature, the applicants believe the amended claims 1 and 5 are not anticipated by Matsui patent.

Similarly, there is no teaching or implication in any of the other cited patents (Aoki et al, Chandrasekhar, Nitta et al and Rushing patents) on the tuning section for changing an effective index of said grating as defined in the amended claims 1 and 5. Therefore, the applicants believe claims 1 and 5 are patentable.

At least for the same reasons, other claims 2-4, 6-13, 16, 18-19, 29-33 are also

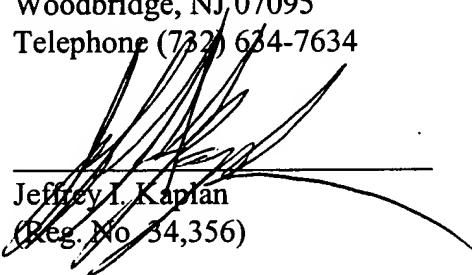
patentable by including all the limitations of the amended claims 1 or 5. In particular, claims 30 and 32 further limit the device with a feature that the tuning region comprises means for selecting a particular wavelength by changing said effective index of said grating, which can not be found or implied anywhere in the cited Matsui patent or other cited patents. This distinguishing feature also renders claims 30 and 32, and therefore their respective dependent claims 31 and 33, patentable.

A corrected Figure 4, which has been approved in the office action, is also enclosed.

Thus, the applicants respectfully request reconsideration based on the amendment and remarks as above. Any fees believed due should be charged to our Deposit Account No. 11-0223.

Respectfully submitted,

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#### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal service as first class mail, in a postage prepaid envelope, addressed to Box RCE, Commissioner for Patents, Washington, D.C. 20231 on August 7, 2002.

Dated August 7, 2002 Signed Paula M. Halsey Print Name Paula M. Halsey



## MARKED-UP VERSION OF AMENDED CLAIMS 1 AND 5

1. (Amended) A semiconductor device comprising:
  - a buried grating;
  - a waveguide core;
  - an absorption section; and
  - a tuning section for changing an effective index of said grating.
5. (Amended) A semiconductor photodetector device comprising:
  - a substrate of a first doping type;
  - an undoped region, laterally disposed above the substrate;
  - a grating positioned between the substrate and the updoped region;
  - a waveguide laterally disposed above the undoped region;
  - an upper region, of a second doping type, laterally disposed above the waveguide region, where the waveguide is of a different atomic composition than the substrate, updoped region, and upper region; and
  - a tuning section for changing an effective index of said grating.

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